# A Montana Fire Atlas


**A Request for MLIA funding**
**Fiscal Year 2015**

**Submitted by**
**National Center for Landscape Fire Analysis**
**College of Forestry and Conservation**
**The University of Montana**
**Missoula, Montana**

## Primary Applicant Information


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Date Submitted: 2014 - 02 - 11 Date Received by State

## Descriptive Title of Applicant's Project

The creation of a Montana Fire Atlas; a comprehensive polygon dataset containing all known wildfire perimeters in Montana for the period 1900 – 2012.

## Relevance and Public Benefit

The citizens of Montana are frequently exposed to and impacted by wildfires, through media reports, smoky skies, closed forests, burn bans, evacuations, and even media reports. Montana's geography and climate have created ecosystems in which fire plays an important role. Fire also plays an important role in the economy of Montana. Because many citizens live close to the places that burn frequently, fire is often on their minds. Even though fire occurs frequently, little spatial data is available on a state-wide scale. To help fire managers, natural resource managers, county planners, legislators and others make better decisions; we propose to create a comprehensive state-wide, polygon-based fire history layer. Being able to see fire locations, fire frequencies, the time since the most recent fire and previous fire sizes will give insights needed by decision makers. Often referred to as a fire atlas, a fire history dataset will help decision makers at the local level, as well as at the state level. It will also be a very useful dataset for researchers, teachers, non-profit organizations and companies who are interested in fire occurrence in Montana.

This project will meet the criteria set forth in the Land Information Plan Grant Category B2.1. The data have been created by various agencies (see Objective 1 below) with different jurisdictions, but when compiled into a fire atlas will be more complete, and thus more useful to these agencies, as well as to the many possible users mentioned above. The long-standing relationships between the National Center for Landscape Fire Analysis and the natural resource and fire management agencies within Montana (Forest Service, National Park Service, Montana Department of Natural Resources and Conservation, and others) will ensure the utility of the dataset created and the positive outcome of this project.

Currently fire data are only available with severe spatial and temporal constraints and often only as point data. There are some nationwide datasets that are not intended for local decision making, due to lack of precision, accuracy and area covered. If someone needs fire data, a lengthy search is required and often turns up limited results. For example, the Montana State Library currently has two feature classes with fire polygons, for the years 2000 and 2003, and each is only for a limited geographic area within Montana.

This project proposes to combine all available spatial data sources and create the most complete fire history layer possible for all of Montana. We will use both remotely sensed data as well as field data collected locally by fire managers. A thorough Quality Assurance/Quality Control process will enable us to create a dataset that is both complete and accurate.

A fire history layer is one dataset that is required for a successful Montana-specific update to the West-wide Wildfire Risk Assessment (WWA). The WWA quantified the risk for wildfires throughout the western United States and was finished in December 2012. The Montana Department of Natural Resources and Conservation aims to tailor this assessment using local data, to improve the planning and decision making with regards to wildfire at a state level.

## Scope of Work

**Project Goal:** To create the most complete and up-to-date wildfire history dataset for Montana.

**Objective 1:** Collect data
- Contact local jurisdictions
- Collect data available on the internet
- Create new polygons from remotely sensed data, guided by available point data

This project will utilize many sources for spatial fire data, including:
- The Monitoring Trends in Burn Severity (MTBS) project
- The Forest Service Northern Region Geospatial Library
- National Park Service Fire Management
- Montana Department of Natural Resources
- Wildland Fire Decision Support System
- The Montana/Idaho Airshed Group
- Moderate Resolution Imaging Spectroradiometer Satellite (MODIS)
- Forest Service Research Data Archive
- Local Forest Service units
- Local BLM units
- Local Tribal (BIA) units

**Objective 2:** Spatial data aggregation
- Merge fire polygons from all sources
- Remove duplicates

**Objective 3:** Append and normalize attributes
- From existing polygons
- From fire point data
- From other sources (i.e., locally kept records)

**Objective 4:** Quality Assurance/Quality Control
- Find anomalies in the data
- Utilize remotely sensed data
- Utilize existing point data

**Objective 5:** Create metadata and publish the dataset
- Create metadata conforming to Montana State Library requirements
- Publish data to Montana State Library GIS archive
- Document workflow for appending additional data

**Project Time Line**

Objective 1: July 2014
Objective 2: September 2014
Objective 3: November 2014
Objective 4: January 2015
Objective 5: March 2015

## Project Management and Organizational Capability

This project is an undertaking of the National Center for Landscape Fire Analysis (NCLFA). The analysis will be done by Valentijn Hoff. Valentijn has 8 years of GIS experience, a post-baccalaureate GIS certificate, and a Master of Science degree in Forestry from The University of Montana. He has worked extensively with spatial fire data in point, polygon, and raster formats. He is familiar with all aspects of data analysis, storage, and utilization. As a wildland firefighter and a spatial analyst, he is keenly aware of the necessity of a high quality fire history feature class and the potential challenges of this undertaking.

This project has the additional support of several fire researchers employed by the NCLFA. These PhD level researchers have a combined experience of both geo-spatial analysis and fire management of more than 160 years. The project is also supported with data, guidance, and advice by GIS specialists and fire managers from the Montana DNRC, as well as federal public land management agencies (BIA, NPS, BLM, and USFS).

## Budget

**Budget Table**

| Category | MLIA share | Applicant Share | Total |
|---|---|---|---|
| Personnel | | | |
| Salary-Valentijn Hoff | $11,700 | | $11,700 |
| Fringe benefits | $6,370 | | $6,370 |
| Travel | | | |
| Equipment | | | |
| Supplies | | | |
| Facilities & Admin. | $903.00 | $6,776.00 | $7679.00 |
| Totals | **$18,973** | **$6,776.00** | **$25,749** |

**Budget Narrative**

All work associated with this project will be performed by the principle applicant. Based on previous projects the best time estimate for this project is 3 months, which equals 65 personnel days, totaling $18,070 in salary and fringe. The University of Montana's indirect cost recovery rate is currently 42.5%. With the MLIA's recovery rate limited to 5% ($903.00), the University of Montana will contribute 37.5% of administrative costs at $6,776.00. No funds are being requested for travel, supplies and equipment, including hardware, software, licenses and network connectivity. To accomplish the goals and objectives of this project, the institution will provide resources and technical support as required for the successful completion of the activity.

## Authorizing Statement

I hereby certify that the information and all statements in this application are true, complete and accurate to the best of my knowledge and that the project or activity complies with all applicable state, local and federal laws and regulations.
I further certify that this project will comply with applicable statutory and regulatory standards.
I further certify that I am (by my signature) authorized to enter into a binding agreement with the Montana State Library to obtain a grant if this application receives approval.

Judy Fredenberg
Director, Research and Sponsored Programs
The University of Montana

Signature and Title of Authorized Representative(s) of Public Entity Applicant

Date: 02-07-14